**Technical**

**MANUAL**

*GRAVITATE Graph Matching Tool*

Release: v1

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# GENERAL INFORMATION

## Release notes

* Release v1 has been developed within the GRAVITATE project, funded by the European Union’s Horizon 2020 research and innovation programme under grant agreement 665155.
* IP and usage rights are described in the related section of this document.

## System Overview

The graph matching tool will query the GRAVITATE BlazeGraph database for artifact metadata and compute pair-wise artifact similarity scores. These scores are saved as a tab delimited CSV file suitable for ingestion via the GRAVITATE ETL process.

## Authorized Use Permission

The GRAVITATE graph matching tool has a BSD license with an attribution clause and restrictions to research, education or evaluation purposes. A commercial license is available royalty free on request.

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## Points of Contact and Support

Contact email: sem03@soton.ac.uk

Type of support: Best Efforts Only

# Getting Started

## System prerequisites and software download

The following instructions need to be followed to prepare your system for installing the GRAVITATE software.

### 3rd party software pre-requisites necessary to install the module

Python 2.7.8

Python Software Foundation

Python Software Foundation License

http://www.python.org/psf/license

numpy 1.13.1+mkl

Author: NumPy Developers

BSD

http://www.numpy.org

munkres 1.0.12

Author: Brian Clapper

Apache Software License

http://software.clapper.org/munkres/

gensim 3.0.1

Author: Radim Rehurek

GNU LGPLv2.1

http://radimrehurek.com/gensim

sklearn 0.0

http://scikit-learn.org/stable/about.html#people

BSD

jena 2.13.0

org.apache.jena

Apache License, Version 2.0

http://www.apache.org/licenses/LICENSE-2.0

### Distribution

https://github.com/GRAVITATE-EU/graph-matching

# Installation

Copy the GRAVITATE graph matching release files to <install dir>

Install Java 1.8

Install Python 2.7 and Pip

Install Python lib Numpy 1.13.1+mk1

Install Python lib Munkres 1.0.12

Install Python lib Gensim 3.0.1

Install Python lib Sklearn 0.0

Note: The blazegraph database endpoint is assumed to be http://localhost:9999/blazegraph/sparql if this is not correct edit config.properties

# System Usage

Edit the configuration file config.properties

+ strPathToQueryGraphID = file containing SPARQL query to find artifact ID’s

+ strPathToQueryConstruct = file containing SPARQL query to create artifact RDF raph

Run the numeric range app

cd <install dir>

java -Xmx32g -cp “graph-construct;third-party/\*” ITinnov.semantic\_matching.numeric\_range\_app

python numeric\_range\_app.py

Run the graph construct app

java -Xmx32g -cp “graph-construct;third-party/\*” ITinnov.semantic\_matching.Graph\_construct\_app

Run the rdf2vec

java -Xmx32g -cp “rdf2vec;third-party/\*” ITinnov.semantic\_matching.Star\_distance\_app

java -Xmx32g -cp “rdf2vec;third-party/\*” ITinnov.semantic\_matching.Graph\_embedding\_app

python rdf\_walks2vec\_app.py

python evaluation\_app.py

The result file file\_distances\_between\_artefacts contains the pair-wise artifact similarity scores ready for ingest via the GRAVITATE ETL process.

1. [↑](#footnote-ref-1)